

(19) World Intellectual Property Organization  
International Bureau

1. THE INTERNATIONAL PATENT COOPERATION TREATY (PCT) IS A TREATY WHICH PROVIDES A SINGLE PROCEDURE FOR THE FILING OF A PATENT APPLICATION IN ONE OR MORE MEMBER STATES OF THE TREATY.

(43) International Publication Date  
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number  
WO 01/19132 A1(51) International Patent Classification<sup>7</sup>: H04R 3/14

(74) Agent: PHILLIPS ORMONDE &amp; FITZPATRICK; 367 Collins Street, Melbourne, VIC 3000 (AU).

(21) International Application Number: PCT/AU00/01036

(22) International Filing Date:  
1 September 2000 (01.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
PQ 2608 3 September 1999 (03.09.1999) AU(71) Applicant (for all designated States except US): TECH-  
STREAM PTY LTD [AU/AU]; 10 Margaret Street, Box  
Hill, VIC 3149 (AU).

(72) Inventor; and

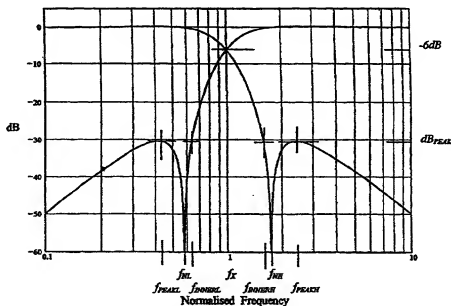
(75) Inventor/Applicant (for US only): THIELE, Albert,  
Neville [AU/AU]; 10 Wycombe Street, Epping, NSW 2121  
(AU).(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,  
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,  
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,  
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,  
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED CROSSOVER FILTERS AND METHOD



(57) Abstract: An improved filter system is disclosed including a low pass filter having a response which rolls off towards a crossover frequency and a high pass filter having a complementary response which rolls off towards the crossover frequency. The responses are arranged such that the combined response of the filters is substantially constant in amplitude at least in the region of the crossover frequency. The response of the low pass filter is defined by a low pass complex transfer function having a first numerator and a first denominator. The response of the high pass filter is defined by a high pass complex transfer function having a second numerator and a second denominator. The desired response is obtained when the second denominator is substantially the same as the first denominator and the sum of the first and second numerators has substantially the same squared modulus as the first or second denominator.